FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

U. S. Department of Energy

National Energy Technology Laboratory

Coal And Biomass To Liquid Fuels:

Research And Development Needs

Funding Opportunity Number: DE-PS26-08NT00258-00

Announcement Type: Initial

CFDA Number: 81.089 Fossil Energy Research and Development

Issue Date:	**03/24/2008**
Letter of Intent Due Date:	**04/11/2008**
Pre-Application Due Date:	**Not Applicable**
Application Due Date:	**05/16/2008 at 8:00:00 PM Eastern Time**

NOTE: NEW REQUIREMENTS FOR GRANTS.GOV

Where to Submit
Applications must be submitted through Grants.gov to be considered for award. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your CCR registration annually. If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in Grants.gov.

Registration Requirements
There are several one-time actions you must complete in order to submit an application through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, and register with Grants.gov). See http://www.grants.gov/GetStarted. Use the Grants.gov Organization Registration Checklist at http://www.grants.gov/assets/OrganizationRegCheck.pdf to guide you through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in the CCR registration process. Applicants, who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible.

IMPORTANT NOTICE TO POTENTIAL APPLICANTS: When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

Microsoft Vista and Office 2007 Compatibility

Grants.gov is currently incompatible with both the new Microsoft (MS) Vista Operating System and the new Microsoft (MS) Office 2007 versions of Word, Excel, and Power Point. In order to create and submit your application to Grants.gov, you must find a computer with a previous version Microsoft Operating System, such as Windows XP.

If you attach a file created using MS Office 2007, you will not get an error message when you submit the application, HOWEVER, your entire application will not be able to be processed or accepted at Grants.gov and will not reach DOE. Grants.gov can accept applications with attachments created in MS Office 2007 if the attachments are saved in the prior format. See the http://www.grants.gov/assets/Vista_and_office_07_Compatibility.pdf for detailed instructions on how to do this. A file created in MS Office 2007 can be identified by the "x" at the end of the file extension, for example "sample.docx" for a Word file. Contact Grants.gov at 1-800-518-4726 with any questions.

Questions
Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. Part VII of this announcement explains how to submit other questions to the U.S. Department of Energy (DOE).

Application Receipt Notices
After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of five e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. When

the AOR receives e-mail Number 5, it is their responsibility to follow the instructions in the e-mail to logon to IIPS and verify that their application was received by DOE. The titles of the five e-mails are:

Number 1 – Grants.gov Submission Receipt Number
Number 2 – Grants.gov Submission Validation Receipt for Application Number
Number 3 – Grants.gov Grantor Agency Retrieval Receipt for Application Number
Number 4 – Grants.gov Agency Tracking Number Assignment for Application Number
Number 5 – DOE e-Center Grant Application Received

The last email will contain instructions for the AOR to register with the DOE e-Center. If the AOR is already registered with the DOE e-Center, the title of the last email changes to:

Number 5 – DOE e-Center Grant Application Received and Matched

This email will contain the direct link to the application in IIPS. The AOR will need to enter their DOE e-Center user id and password to access the application.

TABLE OF CONTENTS

PART I – FUNDING OPPORTUNITY DESCRIPTION

BACKGROUND

Hydrogen is viewed as a potential energy carrier for the future. Its ability to transform its intrinsic energy to fuel transportation, power generation, and industrial processes with only water as a by-product makes it an efficient and clean fuel to meet growing energy demands against an increasing awareness for environmental preservation. Hydrogen is not present in its free state on earth but may be produced from hydrogen containing materials, such as fossil fuels, biomass, and water. The 2004 report from the National Academies, affirms that hydrogen could fundamentally transform U.S. energy systems, but coal must be a significant component for making very large amounts of hydrogen, particularly when energy security is the primary driver.[1] For near- to mid-term applications, hydrogen production from coal is most economical until other resources are available to produce hydrogen at lower costs.

The large-scale production of hydrogen from coal is faced with several challenges that must be overcome before its widespread use becomes a reality. To address these challenges, a Presidential initiative was launched in 2003 announcing a $1.2 billion *Hydrogen Fuel Initiative*. The initiative strives for a hydrogen economy that minimizes America's dependence on foreign oil and reduces greenhouse gas emissions as well as provides funding for hydrogen research and development (R&D). To identify, implement, and integrate the R&D needed to achieve the hydrogen economy, the U.S. Department of Energy (DOE) developed the *Hydrogen Posture Plan*. Several DOE Offices and national laboratories, including the National Energy Technology Laboratory (NETL), are charged with implementing the Hydrogen Posture Plan.

NETL's Hydrogen and Clean Fuels Program supports research and development (R&D) in technologies that can deliver affordable hydrogen produced from coal (or coal/biomass mixtures) with near-zero environmental emissions. Hydrogen is produced from coal (or coal/biomass mixtures) by first gasifying the feedstock to form a mixed gas stream consisting of hydrogen, carbon monoxide, carbon dioxide and contaminants such as sulfur. After a gas cleaning step to remove the contaminants and particulates, pure hydrogen can be separated from the remaining gases and the carbon dioxide captured and sequestered. This process to produce pure hydrogen for use in fuel cells is referred to as the Hydrogen from Coal program's "Central Production Pathway."

The Hydrogen from Coal program also supports research in an "Alternate Production Pathway." This approach to hydrogen production utilizes processes to convert synthesis gas (syngas), the hydrogen and carbon monoxide portion of the cleaned gas mixture, to high quality hydrocarbon liquid fuels or substitute natural gas (SNG). These products can be reformed to provide hydrogen near the point of use or used directly in commercial internal combustion engines in the interim until a hydrogen infrastructure is established.[2]

Program Objective

This announcement will request applications for research and development (R&D) in three different areas of interest. These areas of interest will only address the "Alternate Production Pathway" element described above and will specifically be limited to producing liquid hydrocarbon fuels from coal/biomass mixtures. The overall process that produces these hydrocarbon liquids will be referred to as the coal-biomass-to-liquids (CBTL) process. This process, when combined with carbon capture and sequestration or carbon reuse, is compatible with three overarching principles. The CBTL system uses domestic feed stocks, has a greenhouse gas footprint better than conventional petroleum fuels, and is projected to be economical at a world oil price significantly below existing levels of roughly $100 per

---

[1] The Hydrogen Economy: Opportunities, Costs, Barriers, and R&D Needs, The National Academies Press, http://www.nap.edu

[2] http://www.netl.doe.gov/technologies/hydrogen_clean_fuels/index.html

barrel. Since low-temperature gasification of biomass or coal produces tars, it will be assumed that the gasifier in the CBTL process is a high-temperature high-pressure entrained-flow (EF) oxygen-blown gasifier.

If done correctly, biomass has great international potential as a renewable energy source. Studies suggest that it is available in large quantities and that it is suitable for the sustainable production of (generally carbon-containing) transportation fuels and chemicals. The application of biomass as feedstock for the production of fuels and chemicals allows for the reduction of CO_2 emissions. Therefore, it is not surprising that ambitious national and international goals, like the *Biofuel Directive of the European Union and the U.S. Biomass Research and Development Act of 2000*, call for large bio-based synthesis gas (syngas or biosyngas) production capacity. Robust, fuel-flexible, and high-efficiency gasification technology, combined with Fischer-Tropsch (FT) conversion technology, offers significant opportunity as a technology of choice for optimum biomass conversion to liquid fuels and other valuable chemical products.

However, in order to meet aggressive production goals of alternative methods of conversion to liquid fuels, biomass is only best utilized as a partial feed (co-feed) to large-scale, coal-fed gasification technologies that have been developed over the past 30 years for integrated gasification combined cycle (IGCC) applications. This technological approach avoids key problems of small biomass-only type plants – high specific cost, low efficiency, tar and oil formation in the raw syngas, and shut-off risk if there is a biomass shortage. Co-gasification, mainly oxy-co-gasification with steam, allows increased efficiency and reduced environmental impact in various types of gasifiers. For large-scale power generation and refinery applications (>50 MWe), the gasification field is dominated by plants based on the pressurized, oxygen-blown, entrained-flow gasification. Recent successful tests with crop and waste biomass indicate that these types of gasifiers are reasonably well-suited to co-gasify biomass with coal and, critically, they eliminate tar formation and apparently haven't been greatly impacted by ash content differences with coal/coke.

This funding opportunity notice contains three program areas of interest identified below. Applicants are cautioned that this FOA (DE-PS26-08NT00258-00) is a master announcement and that each Program Area of Interest has its own program-specific number for submission of applications. Applications for project awards resulting from this FOA must be submitted under one of the following Program Areas of Interest:

Area of Interest 1 - Feeding Coal/Biomass Mixtures Across a Pressure Gradient (DE-PS26-08NT00258-01:

Objective of Proposed Activity: Coal has advantages of great abundance, relatively low cost and high energy density. Furthermore, the production of synthesis gas from coal is a proven technology at commercial scale. Coal has a low hydrogen to carbon ratio and the production of FT diesel from coal produces approximately twice as much CO_2 as does the refining of petroleum into diesel. This disadvantage can be managed by the capture and sequestration or reuse of the CO_2 produced when FT diesel is made. When this is done, the CO_2 produced with FT diesel is equivalent to that from petroleum-refined diesel. If biomass is used as a portion of the source of the synthesis gas, the resulting FT diesel will have essentially no net impact on atmospheric CO_2 levels because the carbon in the biomass that goes into the synthesis gas is generated from atmospheric CO_2 by photosynthesis. Unfortunately, biomass has numerous disadvantages as a feedstock to produce synthesis gas including a low energy density and high moisture content that leads to high production and processing costs. It is also difficult to feed biomass reliably into a pressurized gasification reactor and there have been very few demonstrations of this technology at commercial scale. The "Feeding Coal/Biomass Mixtures Across a Pressure Gradient" area of interest solicits development of optimal methods to pretreat and feed biomass into a high-temperature high-pressure coal gasifier.

Project Description: The CBTL process entails gathering the biomass and pretreating it to a form that can be fed to the gasifier. It is envisioned that the feed to the gasifier will be a coal/biomass mixture.

However, if applicants can show through preliminary economics that a separate feeding system for the biomass is superior, applications for the separate feeding of biomass will be considered.

It is expected that the R&D will demonstrate, at an appropriate scale, that coal/biomass mixtures containing up to 50 wt. % biomass (dry coal and dry biomass basis) can be successfully introduced into an environment that simulates the commercial operating conditions of the high-temperature high-pressure entrained-flow gasifier needed to produce liquid fuels from these mixtures. Feed systems for these operating conditions have not been fully evaluated for their capability to function reliably across the broad range of feed properties likely to be encountered for the many mixture combinations of various types of coal and biomass. Tests will be performed on existing feed designs. New feed system development is not sought. The scale of the equipment to be tested will be sufficient to extrapolate the data to a full-scale commercial feed system. The test matrix will include the three major coal types: lignite, sub-bituminous and bituminous; three biomass types: corn stover, wood (forest residue, manufacturing residue, or short rotation woody crop - e.g. poplar), and grass (switchgrass and mixed prairie grasses). Each test will include a specific biomass type mixed with a specific coal type at biomass concentrations of 30 wt.% and 50 wt.%. The pressure/temperature conditions of the tests and the particle sizes of the biomass will be those that are appropriate for the selected commercial gasification system. By implication, prior to the tests, the biomass must be processed to reduce moisture content and/or biomass particle size to levels that are sufficient to prepare a coal/biomass mixture that can be fed by the selected system into a defined pressure/temperature zone.

The proposed research shall be structured according to the following tasks:

1. Identify the most favorable biomass and coal pretreatment scheme, including data and analyses to support its justification.

2. Perform tests to bring the coal/biomass mixtures defined above to the simulated EF conditions.

3. Using the data from 1 and 2, provide an analysis of the EF feeding system for the CBTL process, with details sufficient to permit a preliminary economic evaluation of the process.

Area of Interest 2 - Characterization of the Products from Gasifiying Coal/Biomass Mixtures (DE-PS26-08NT00258-02):

Objective of Activity: It is anticipated that the EF oxy-gasification of various coal/biomass combinations will produce different raw syngas compositions. To aid the R&D on CBTL syngas clean-up system(s), a database of raw syngas compositions from the EF gasification of various coal/biomass combinations is needed.

Project Description: It will be necessary to perform, at laboratory or bench-scale in a batch or continuous unit, a complete characterization of the gas products (including trace components), liquid products (if any), and solid products resulting from the gasification of various coal/biomass mixture combinations. Biomass gasification can possibly result in a different gasifier product composition than that which results from coal gasification. Characterization of the gasifier products will provide guidance on the appropriate clean-up system(s) and operating parameters needed for each specific coal/biomass feedstock mixture. The target test matrix will include the three major coal types: lignite, sub-bituminous and bituminous; three biomass types: corn stover, wood (forest residue, manufacturing residue, or short rotation woody crop - e.g. poplar), and grass (switchgrass and mixed prairie grasses). Each test will include a specific biomass type mixed with a specific coal type at biomass concentrations of 30 wt.% and 50 wt.% (dry coal and dry biomass basis), at a minimum. More tests at different concentrations may be necessary to show a trend. The pressure/temperature conditions of the tests will be those that are appropriate to a defined commercial coal gasification system configured to produce liquid fuels from coal/biomass mixtures.

Area of Interest 3 - Optimization of the Fischer-Tropsch (FT) and Water-Gas-Shift (WGS) Processes (DE-PS26-08NT00258-03):

Objective of Activity: Current commercial catalysts used in WGS processes and FT synthesis are intrinsically very sensitive to small amounts of poisons. In commercial operation, catalysts are replaced or regenerated after a certain operational period. The specification of syngas cleaning is therefore based on economic considerations: investment in gas cleaning versus accepting decreasing production due to poisoning of the catalyst. This activity attempts to quantify the effects on WGS and FT catalysts from poisons that may result from EF gasification of coal/biomass mixtures.

Project Description: It is anticipated that ash, sulfur species, trace toxic metals, halides, and nitrogen species will be lower in syngas from coal/biomass EF gasification than from coal alone as a feed to the EF gasifier. However, sodium and potassium compounds, such as KCl and NaCl, are syngas contaminants of concern that may be increased in concentration in the EF gasification of coal/biomass mixtures with hot-gas or warm-gas clean-up systems.

Tests are sought to determine the effects of these higher levels of sodium and potassium on WGS and FT processes to ensure acceptable catalyst activity and selectivity for making liquid fuels. The tests will be performed at either laboratory or bench-scale on simulated gas mixtures containing 100 ppbw (parts per billion by mass) sodium and 100 ppbw potassium. A suggested composition of the syngas to WGS (mole%, dry basis) is H_2 32.7%, CO 42.5%, CO_2 19.6%, and CH_4 5.2%. It is assumed that the syngas will contain sufficient H_2O at WGS inlet conditions to bring the H_2/CO ratio to that which is necessary for FT synthesis. Tests should also be conducted with 1 ppmv H_2S and 1 ppmv NH_3 (separately and together) to elucidate if there are compounding effects from sulfur and nitrogen compounds. Different syngas species (components and contaminants) and their concentrations can be proposed if sufficient technical justification is provided. The pressure/temperature conditions of the tests will be those that are appropriate to a defined coal gasification system that utilizes both the WGS and FT processes, or an FT process that combines WGS. The tests should be long enough to establish the effects on catalyst activity. Based on the results from these tests, a follow-on phase in a future FOA is anticipated whereby catalyst improvements and/or process modifications will be developed to ultimately reduce the capital and operating expenses associated with producing transportation fuels from coal/biomass mixtures.

REFERENCE MATERIAL

- The references provided below comprise a list of selected references and do not represent an exhaustive search. These references are provided as starting materials to assist applicants in developing a sound application that builds upon past work. Cited references are available in any technical university library or through downloads at the respective websites. ***Applicants are advised that the U.S. DOE will not be held liable for any costs incurred in obtaining these references.***

General Reference

1. NETL and USAF Release Feasibility Study for Conceptual Coal+Biomass-to-Liquids Facility, August 29, 2007. http://www.netl.doe.gov/energy-analyses/pubs/NETL-AF%20CBTL%20Study%20Final%202007%20Aug%2024.pdf

2. Klass, Donald A., "Biomass for Renewable Energy, Fuels, and Chemicals", Academic Press, (1998).

3. Van Ree, R., et al., "Techno-Economic and Environmental Analysis of a Thermo-Chemical Bio-refinery Process for Large Scale Biosyngas-Derived FT-Diesel Production," ECN Biomass presentation at 1st International Biorefinery Workshop, Washington D.C., July 20-21, 2005. http://www.biorefineryworkshop.com/presentations/Ree.pdf

4. U.S. Department of Energy, Energy Efficiency and Renewable Energy, Biomass Program, http://www1.eere.energy.gov/biomass .

5. McDaniel, J.' "Biomass Gasification at Polk Power Station – Final Technical Report," DOE Award DE-FG26-01NT41365, May 2002. http://www.osti.gov/bridge/servlets/purl/823831-bTDn1G/native/

Area of Interest 1: Feeding Coal/Biomass Mixtures Across a Pressure Gradient (DE-PS26-08NT00258-01)

1. Boerrigter, H. and A. Van Der Drift, "Biosyngas – Description of R&D Trajectory Necessary to Reach Large-Scale Implementation of Renewable Syngas from Biomass," Results of the ECN task of the project "*BIOSYNGAS: Multifunctional intermediary for the production of renewable power, gaseous energy carriers, transportation fuels, and chemicals from biomass*" http://qualenergia.it/UserFiles/Files/Rn_Bi_Te_01_Biosyngas_ECN_2004.pdf .

2. Derek L. Aldred and Timothy Saunders, "Achieve Continuous Injection of Solid Fuels into Advanced Combustion System Pressures," Topical Report - Phase III Program. http://www.osti.gov/bridge/servlets/purl/909121-3CVmT0/ .

3. Drift, A. van der; Boerrigter, H.; Coda, B.; Cieplik, M.K.; Hemmes, K., Energy research Centre of the Netherlands (ECN), Petten, The Netherlands, report C--04-039, 58 pp. - *Entrained flow gasification of biomass; Ash behaviour, feeding issues, system* analyses, April 2004. http://www.ecn.nl/docs/library/report/2004/c04039.pdf

Area of Interest 2: Characterization of the Products from Gasifiying Coal/Biomass Mixtures (De-PS26-08NT00258-02)

1. Boerrigter, H. and A. Van Der Drift, "LARGE-SCALE PRODUCTION OF FISCHER-TROPSCH DIESEL FROM BIOMASS," Results of the ECN task of the project "*BIOSYNGAS: Multifunctional intermediary for the production of renewable power, gaseous energy carriers,*

transportation fuels, and chemicals from biomass"
http://qualenergia.it/UserFiles/Files/Rn_Bi_Te_01_Biosyngas_ECN_2004.pdf .

2. Shiying Lin., et al., "Effect of Coal Rank on Steam Gasification of Coal/CaO Mixtures," *Energy & Fuel*, 2007, 21, 2763-2768.

3. Kazuhiro Kumabe, et al, "Co-gasification of woody biomass and coal with air and steam," *Fuel*, 86, (2007), 684-689.

Area of Interest 3: Optimization of the Fischer-Tropsch (FT) and Water-Gas-Shift (WGS) Processes (DE-PS26-08NT00258-03)

1. Boerrigter, H. and A. Van Der Drift, "LARGE-SCALE PRODUCTION OF FISCHER-TROPSCH DIESEL FROM BIOMASS," Presented at Congress on Synthetic Biofuels - Technologies, Potentials, Prospects, *Wolfsburg, Germany, 4 November 2004*
http://www.ecn.nl/docs/library/report/2004/rx04119.pdf .

2. Boerrigter, H. and A. Van Der Drift, "Synthesis Gas from Biomass for Fuels and Chemicals," Paper for workshop organized by IEA Bioenergy Task 33 (biomass gasification) in conjunction with the SYNBIOS conference held in Stockholm, Sweden, May 2005.
http://www.ecn.nl/docs/library/report/2006/c06001.pdf

PART II – AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

- DOE anticipates awarding cooperative agreements under this program announcement (See Section VI.B.2 Statement of Substantial Involvement)

B. ESTIMATED FUNDING

- Approximately $4.38 million DOE funding is expected to be available for new awards under this announcement.

C. MAXIMUM AND MINIMUM AWARD SIZE

- Ceiling (i.e., the maximum amount for an individual award made under this announcement): none

- Floor (i.e., the minimum amount for an individual award made under this announcement): none

D. EXPECTED NUMBER OF AWARDS

- DOE anticipates making approximately 5 awards under this announcement.

Topic Area of Interest	Number of Awards
1 Feeding Coal/Biomass Mixtures Across a Pressure Gradient	2
2 Characterization of the Products from Gasifiying Coal/Biomass Mixtures	1
3 Optimization of the Fischer-Tropsch and Water-Gas-Shift Processes	2

E. ANTICIPATED AWARD SIZE

- Estimated Total Award Value: $7,200,000 (which includes 35% cost share for Area of Interest 1, 20% for Area of Interest 2, and 20% for Area of Interest 3).

F. PERIOD OF PERFORMANCE

- The anticipated period of performance for projects under each Program/Topic Area in this announcement is:

Program/Topic Area of Interest	Period of Performance
1 Feeding Coal/Biomass Mixtures Across a Pressure Gradient	24-36 months
2 Characterization of the Products from Gasifiying Coal/Biomass Mixtures	≤24 months
3 Optimization of the Fischer-Tropsch and Water-Gas-Shift Processes	24-36 months

Projects are to include go/no-go decisions at key project milestones.

G. TYPE OF APPLICATION

- DOE will accept new applications under this announcement.

PART III - ELIGIBILITY INFORMATION

ELIGIBLE APPLICANTS

- All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

A. COST SHARING

- Program/Topic Area of Interest — Cost Sharing Requirement
  1 Feeding Coal/Biomass Mixtures Across a Pressure Gradient — 35%
  2 Characterization of the Products from Gasifiying Coal/Biomass Mixtures — 20%
  3 Optimization of the Fischer-Tropsch and Water-Gas-Shift Processes — 20%

B. OTHER ELIGIBILITY REQUIREMENTS

- **Federally Funded Research and Development Center (FFRDC) Contractors**.
  FFRDC contractors are not eligible for an award under this announcement, but they may be proposed as a team member on another entity's application subject to the following guidelines:

  Authorization for non-DOE/NNSA FFRDCs. The Federal agency sponsoring the FFRDC contractor must authorize in writing the use of the FFRDC contractor on the proposed project and this authorization must be submitted with the application. The use of a FFRDC contractor must be consistent with the contractor's authority under its award and must not place the FFRDC contractor in direct competition with the private sector.

  Authorization for DOE/NNSA FFRDCs. The cognizant contracting officer for the FFRDC must authorize in writing the use of a DOE/NNSA FFRDC contractor on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization.

  > "Authorization is granted for the _____ Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complimentary to the missions of the laboratory, will not adversely impact execution of the DOE/NNSA assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector."

  Value/Funding. The value of, and funding for, the FFRDC contractor portion of the work will not normally be included in the award to a successful applicant. Usually, DOE/NNSA will fund a DOE/NNSA FFRDC contractor through the DOE field work proposal system and other FFRDC contractors through an interagency agreement with the sponsoring agency.

  Cost Share. The applicant's cost share requirement will be based on the total cost of the project, including the applicant's and the FFRDC contractor's portions of the effort.

FFRDC Contractor Effort:

- The FFRDC contractor effort, in aggregate, shall not exceed 25% of the total estimated cost of the project, including the applicant's and the FFRDC contractor's portions of the effort.

Responsibility. The applicant, if successful, will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to, disputes and claims arising out of any agreement between the applicant and the FFRDC contractor.

PART IV – APPLICATION AND SUBMISSION INFORMATION

A. ADDRESS TO REQUEST APPLICATION PACKAGE

- Application forms and instructions are available at Grants.gov. To access these materials, go to http://www.grants.gov, select "Apply for Grants," and then select "Download Application Package." Enter the CFDA and/or the funding opportunity number located on the cover of this announcement and then follow the prompts to download the application package.

B. LETTER OF INTENT AND PRE-APPLICATION

1. Letter of Intent.

- Applicants are requested to submit a letter of intent by 04/11/2008. This letter should include the name of the applicant, the title of the project, the name of the Project Director/Principal Investigator(s), the amount of funds requested, and a one-page abstract. Letters of intent will be used by DOE/NNSA to organize and expedite the merit review process. Failure to submit such letters will not negatively affect a responsive application submitted in a timely fashion. The letter of intent should be sent by E-mail to Angela.Harshman@netl.doe.gov.

2. Pre-application

- Pre-applications are not required.

C. CONTENT AND FORM OF APPLICATION – 424 (R&R) (RESEARCH & RELATED)

You must complete the mandatory forms and any applicable optional forms (e.g., Disclosure of Lobbying Activities (SF-LLL)) in accordance with the instructions on the forms and the additional instructions below. Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement.

1. **SF 424 (R&R)** Complete this form first to populate data in other forms. Complete all the required fields in accordance with the pop-up instructions on the form. To activate the instructions, turn on the "Help Mode" (Icon with the pointer and question mark at the top of the form). The list of certifications and assurances referenced in Field 18 can be found on the DOE Financial Assistance Forms Page at http://management.energy.gov/business_doe/business_forms.htm under Certification and Assurances.

2. **RESEARCH AND RELATED Other Project Information**
   Complete questions 1 through 5 and attach files. The files must comply with the following instructions:

   Project Summary/Abstract (Field 6 on the Form)
   The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as the Department may make it available to the public. The project summary must not exceed 1 page when printed using standard 8.5" by 11" paper with 1" margins (top, bottom, left and right) with font not smaller than 11 point. To attach a Project Summary/Abstract, click "Add Attachment."

Project Narrative (Field 7 on the Form)
The project narrative must not exceed thirty (30) pages, including cover page, table of contents, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right). **EVALUATORS WILL ONLY REVIEW THE NUMBER OF PAGES SPECIFIED IN THE PRECEDING SENTENCE.** The font must not be smaller than 11 point. Do not include any Internet addresses (URLs) that provide information necessary to review the application, because the information contained in these sites will not be reviewed. See Part VIII.D for instructions on how to mark proprietary application information. To attach a Project Narrative, click "Add Attachment."

The project narrative must include:

- Project Objectives: This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.

- Merit Review Criterion Discussion The section should be formatted to address each of the merit review criterion and sub-criterion listed in Part V.A. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. DOE WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION AND SUB-CRITERION.

- Relevance and Outcomes/Impacts: This section should explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts.

- Roles Of Participants: For multi-organizational or multi-investigator projects, describe the roles and the work to be performed by each participant/investigator, business agreements between the applicant and participants, and how the various efforts will be integrated and managed.

- Multiple Principal Investigators: The applicant, whether a single organization or team/partnership/consortium, must indicate if the project will include multiple PIs. This decision is solely the responsibility of the applicant.

  If multiple PIs will be designated, the application must identify the Contact PI/Project Coordinator and provide a "Coordination and Management Plan" that describes the organization structure of the project as it pertains to the designation of multiple PIs. This plan should, at a minimum, include:

  - process for making decisions on scientific/technical direction;
  - publications;
  - intellectual property issues;
  - communication plans;
  - procedures for resolving conflicts; and
  - PIs' roles and administrative, technical, and scientific responsibilities for the project.

- Facilities And Other Resources: Identify the facilities (e.g., office, laboratory, computer, etc.) to be used at each performance site listed and, if appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Provide any information describing the other resources

available to the project such as machine and electronics shops.

- Equipment: List important items of equipment already available for this project and, if appropriate, note the location and pertinent capabilities of each. If you are proposing to acquire equipment, describe comparable equipment, if any, already at your organization and explain why it cannot be used.

- Bibliography And References, If Applicable: Provide a bibliography for any references cited in the Project Narrative section. This section must include only bibliographic citations.

- Statement Of Project Objectives (SOPO): **The Statement of Project Objectives will not count in the project narrative page limitation.**
  The Department of Energy's, National Energy Technology Laboratory uses a specific format for Statement of Project Objectives in its awards. In announcements such as this one, where the Government does not provide a Statement of Project Objectives, the Applicant is to provide one, which the DOE will then use to generate the Statement of Project Objectives to be included in the award.

  The project narrative must contain a single, detailed Statement of Project Objectives that addresses how the project objectives will be met. The Statement of Project Objectives must contain a clear, concise description of all activities to be completed during project performance and follow the structure discussed below. The Statement of Project Objectives may be released to the public by DOE in whole or in part at any time. It is therefore required that it shall not contain proprietary or confidential business information.

  The Statement of Project Objectives is generally less than 10 pages in total for the proposed work. Applicants shall prepare the Statement of Project Objectives in the following format:

  TITLE OF WORK TO BE PERFORMED

  (Insert the title of work to be performed. Be concise and descriptive.)

  A. OBJECTIVES

  Include one paragraph on the overall objective(s) of the work. Also, include objective(s) for each phase of the work.

  B. SCOPE OF WORK

  This section should not exceed one-half page and should summarize the effort and approach to achieve the objective(s) of the work for each Phase.

  C. TASKS TO BE PERFORMED

  Tasks, concisely written, should be provided in a logical sequence and should be divided into the phases of the project, as appropriate. This section provides a brief summary of the planned approach to this project. An outline of the Project Management Plan (referenced in Task 1.0 below and required to be submitted with your application) is provided later in this Part.

PHASE I

Task 1.0 – Project Management and Planning

(Description includes work elements required to revise and maintain the Project Management Plan and to manage and report on activities in accordance with the plan)

Subtask 1.1

(Description)

Task 2.0 - (Title)

PHASE II (Optional)

Task 3.0 - (Title)

D. DELIVERABLES

The periodic, topical, and final reports shall be submitted in accordance with the attached "Federal Assistance Reporting Checklist" and the instructions accompanying the checklist.

[Note: The Recipient shall provide a list of deliverables other than those identified on the "Federal Assistance Reporting Checklist" that will be delivered. These reports shall also be identified within the text of the Statement of Project Objectives. See the following examples:

1. Task 1.1 - (Report Description)

2. Task 2.2 - (Report Description)

E. BRIEFINGS/TECHNICAL PRESENTATIONS (If applicable)

The Recipient shall prepare detailed briefings for presentation to the Project Officer at the Project Officer's facility located in Pittsburgh, PA or Morgantown, WV. Briefings shall be given by the Recipient to explain the plans, progress, and results of the technical effort as needed.

The Recipient shall provide and present a technical paper(s) at the DOE/NETL Annual Contractor's Review Meeting to be held at the NETL facility located in Pittsburgh, PA or Morgantown, WV.

- Project Performance Site:
  Indicate the primary site where the work will be performed. If a portion of the work will be performed at any other sites, identify those sites, also.

- Biographical Sketch Appendix*:*
  Provide a biographical sketch for the project director/principal investigator (PD/PI) and each senior/key person listed in Section A on the R&R Budget form. Provide the biographical sketch information as an appendix to your project narrative. Do not attach a separate file. The biographical sketch appendix will not count in the project narrative page limitation. The biographical information for each person must not exceed 2 pages when printed on 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point and must include:

Education and Training:
Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree, and year.

Research and Professional Experience:
Beginning with the current position list, in chronological order, professional/academic positions with a brief description.

Publications:
Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.

Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications.

Synergistic Activities: List no more than 5 professional and scholarly activities related to the effort proposed.

- Bibliography & References Cited Appendix:
  Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. In order to reduce the number of files attached to your application, please provide the Bibliography and References Cited information as an appendix to your project narrative. Do not attach a file in field 8. This appendix will not count in the project narrative page limitation.

- Facilities & Other Resources Appendix:
  This information is used to assess the capability of the organizational resources, including subawardee resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical, and Other). If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. In order to reduce the number of files attached to your application, please provide the Facility and Other Resource information as an appendix to your project narrative. Do not attach a file in field 9. This appendix will not count in the project narrative page limitation.

- Equipment Appendix:
  List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. In order to reduce the number of files attached to your application, please provide the Equipment information as an appendix to your project narrative. Do not attach a file in field 10. This appendix will not count in the project narrative page limitation.

Other Attachments (Field 11 on the form):

If you need to elaborate on your responses to questions 1-5 on the "Other Project Information" document, attach a file in field 11.

Also, attach the following files in field 11:

Project Management Plan.

This plan should be formatted to include the following sections with each section to include the information as described below:

A. Executive Summary: Provide a description of the project that includes the objective, project goals, and expected results. For purposes of the application, this information is included in the Project Narrative (Field 7) and should be simply copied to this document for completeness, so that the Project Management Plan is a stand-alone document.

B. Risk Management: Provide a summary description of the proposed approach to identify, analyze, and respond to perceived risks associated with the proposed project. Project risk events are uncertain future events that, if realized, impact the success of the project. As a minimum, include the initial identification of significant technical, resource, and management issues that have the potential to impede project progress and strategies to minimize impacts from those issues.

C. Milestone Log: Provide milestones for each **phase** of the project. Each milestone should include a title and planned completion date, Milestones should be quantitative and show progress toward project goals. Provide at least two (2) milestones per project year.

[Note: During project performance, the Recipient will report the Milestone Status as part of the required quarterly Progress Report as prescribed under Attachment 4, Reporting Requirements Checklist. The Milestone Status will present actual performance in comparison with Milestone Log, and include:

(1) the **actual** status and progress of the project,

(2) specific progress made toward achieving the project's milestones, and,

(3) any proposed changes in the project's schedule required to complete milestones.

D. Funding and Costing Profile: Provide a table (the Project Funding Profile) that shows, by **phase**, the amount of government funding going to each project team member. Also, provide a table (the Project Costing Profile) that projects, by month, the expenditure of government funds for the first **phase**, at a minimum.

E. Project Timeline: Provide a timeline of the project (similar to a Gantt chart) broken down by each task and subtask, as described in the Statement of Project Objectives. The timeline should include for each task, a start date, and end date. The timeline should show interdependencies between tasks and include the milestones that are identified in the Milestone Log (Section C).

F. Success Criteria at Decision Points: Provide success criteria for each decision point in the project, including go/no-go decision points and the conclusions of **phases** and the entire

project. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project.

[Note: As the first task in the Statement of Project Objectives, successful applicants will revise the version of the Project Management Plan that is submitted with their applications by including details from the negotiation process. This Project Management Plan will be updated by the Recipient as the project progresses, and the Recipient must use this plan to report schedule and budget variances.]

Save this plan in a single file named "pmp.pdf" and click on "Add Attachments" in Field 11 to attach.

Commitment Letters from Third Parties Contributing to Cost Sharing
If a third party, (i.e., a party other than the organization submitting the application) proposes to provide all or part of the required cost sharing, the applicant must include a letter from the third party stating that it is committed to providing a specific minimum dollar amount of cost sharing. The letter should also identify the proposed cost sharing (e.g., cash, services, and/or property) to be contributed. Letters must be signed by the person authorized to commit the expenditure of funds by the entity and be provided in a PDF format. Save this information in a single file named "CLTP.pdf" and click on "Add Attachments" in Field 11 to attach.

Budget for DOE/NNSA Federally Funded Research and Development Center (FFRDC) Contractor, if applicable. If a DOE/NNSA FFRDC contractor is to perform a portion of the work, you must provide a DOE Field Work Proposal in accordance with the requirements in DOE Order 412.1 Work Authorization System. This order and the DOE Field Work Proposal form are available at http://management.energy.gov/business_doe/business_forms.htm. Use the FFRDC name as the file name (up to 10 letters) and attach to the R&R Other Project Information form in Field 11 – Add Attachments.

3. RESEARCH AND RELATED BUDGET (TOTAL FED + NON-FED)

Complete the Research and Related Budget (Total Fed & Non-Fed) form in accordance with the instructions on the form (Activate Help Mode to see instructions) and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this announcement (See PART IV. G).

Budget Justification (Field K on the form).
Provide the required supporting information for the following costs (See R&R instructions): equipment; domestic and foreign travel; participant/trainees; material and supplies; publication; consultant services; ADP/computer services; subaward/consortium/contractual; equipment or facility rental/user fees; alterations and renovations; and indirect cost type. Provide any other information you wish to submit to justify your budget request. If cost sharing is required, provide an explanation of the source, nature, amount, and availability of any proposed cost sharing. Attach a single budget justification file for the entire project period in Field K. The file automatically carries over to each budget year.

4. R&R SUBAWARD (Total Fed + Non-Fed) FORM

Budgets for Subawardees, other than DOE FFRDC Contractors. You must provide a separate cumulative R&R budget for each subawardee that is expected to perform work estimated to be more than $100,000 or 50 percent of the total work effort (whichever is less). Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET (Total Fed + Non-Fed) FORM and e-mail it to each subawardee that is required to submit a separate budget. After the Subawardee has e-mailed its completed budget back to you, attach it to one of the blocks provided on the form. Use up to 10 letters of the subawardee's name as the file name.

5. Disclosure of Lobbying Activities (SF-LLL)

If applicable, complete SF- LLL. Applicability: If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

SUMMARY OF REQUIRED FORMS/FILES

Your application must include the forms from the application package and other documents shown below:

Name of Document	Format	Attach to
SF 424 (R&R)	Form	N/A
RESEARCH AND RELATED Other Project Information	Form	N/A
Project Summary/Abstract	PDF	Field 6
Project Narrative, including required appendices	PDF	Field 7
Budget for DOE/NNSA FFRDC, if applicable	PDF	Field 11
Project Management Plan	PDF	Field 11
Commitment Letters from Third Parties	PDF	Field 11
RESEARCH AND RELATED BUDGET (Total Fed + Non-Fed)	Form	N/A
Budget Justification	PDF	Field K
R&R SUBAWARD BUDGET (Total Fed + Non-Fed) ATTACHMENT(S) FORM, if applicable	Form	N/A
SF-LLL Disclosure of Lobbying	Form	N/A

Activities, if applicable		

C. SUBMISSIONS FROM SUCCESSFUL APPLICANTS

If selected for award, DOE/NNSA reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable

D. SUBMISSION DATES AND TIMES

1. Pre-application Due Date

- Pre-applications are not required.

2. Application Due Date

- Applications should be received by 5/16/2008, not later than 8:00 PM Eastern Time. You are encouraged to transmit your application well before the deadline. APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.

E. INTERGOVERNMENTAL REVIEW

- This program is not subject to Executive Order 12372 – Intergovernmental Review of Federal Programs.

F. FUNDING RESTRICTIONS

Cost Principles Costs must be allowable in accordance with the applicable Federal cost principles referenced in 10 CFR part 600. The cost principles for commercial organization are in FAR Part 31.

Pre-award Costs Recipients may charge to an award resulting from this announcement pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR part 600. Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90 day calendar period.

Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

G. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS

1. Where to Submit

- **APPLICATIONS MUST BE SUBMITTED THROUGH GRANTS.GOV TO BE CONSIDERED FOR AWARD.** Submit electronic applications through the "Apply for Grants" function at www.Grants.gov. If you have problems completing the registration process or submitting your application, call Grants.gov at 1-800-518-4726 or send an email to support@grants.gov.

2. Registration Process

- You must COMPLETE the one-time registration process (all steps) before you can submit your first application through Grants.gov (See www.grants.gov/GetStarted). **We recommend that you start this process at least three weeks before the application due date**. It may take 21 days or more to complete the entire process. Use the Grants.gov Organizational Registration Checklists at http://www.grants.gov/assets/OrganizationRegCheck.pdf to guide you through the process. IMPORTANT: During the CCR registration process, you will be asked to designate an E-Business Point of Contact (EBIZ POC). The EBIZ POC must obtain a special password called "Marketing Partner identification Number" (MPIN). When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e., Grants.gov registration).

3. Application Receipt Notices

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of five e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. When the AOR receives email Number 5, it is their responsibility to follow the instructions in the email to logon to IIPS and verify that their application was received by DOE. You will need the Submission Receipt Number (email Number 1) to track a submission. The titles of the five e-mails are:

Number 1 - Grants.gov Submission Receipt Number
Number 2 - Grants.gov Submission Validation Receipt for Application Number
Number 3 - Grants.gov Grantor Agency Retrieval Receipt for Application Number
Number 4 - Grants.gov Agency Tracking Number Assignment for Application Number
Number 5 – DOE e-Center Grant Application Received

The last email will contain instructions for the AOR to register with the DOE e-Center. If the AOR is already registered with the DOE e-Center, the title of the last email changes to:

Number 5 – DOE e-Center Grant Application Received and Matched

This email will contain the direct link to the application in IIPS. The AOR will need to enter their DOE e-Center user id and password to access the application.

Part V - APPLICATION REVIEW INFORMATION

A. CRITERIA

1. Initial Review Criteria

- Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that (1) the applicant is eligible for an award; (2) the information required by the announcement has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the funding opportunity announcement.

2. Merit Review Criteria

Applications submitted in response to this funding opportunity will be evaluated and scored in accordance with the criteria and weights listed below:

- Criterion 1 - Scientific and Technical Merit (50%)
  - The degree to which the Applicant understands and conveys the nature and significance of the scientific challenges and the problems being addressed in the FOA and application.
  - The degree to which the proposed work is based on sound scientific and engineering principles, and is designed to overcome limitations or make advances on the current state of technology, knowledge or capabilities.
  - The likelihood of developing a new successful technology (Area of Interest 1A).
  - The relevance of the proposed project to the objectives of this announcement.
  - The significance of the likely impacts and benefits of the proposed work in comparison to current state of knowledge or current commercial and emerging technologies.

- Criterion 2 - Technical Approach (35%)
  - Adequacy and feasibility of the applicant's approach to achieving the funding opportunity announcement's stated objectives.
  - Appropriateness, rationale, and completeness of the proposed Statement of Project Objectives.
  - Appropriateness and completeness of the draft Project Management Plan including the identification of technical, organizational and other risks or factors affecting that potential for success, and mitigation strategies for these risks.
  - Adequacy of the proposed labor categories and staffing plan.
  - Adequacy of the proposed schedule and the degree to which both appropriate technical and schedule milestones are clearly identified and defined in the proposal, and the likelihood that these milestones will be successfully met based on the proposed technical approach.
  - Adequacy of proposed travel and technology transfer plan, including any plans for commercialization or utilization of the proposed technology.

- Criterion 3 - Technical and Management Capabilities (15%)
  - Clarity, logic, and effectiveness of project organization, including subawardees, to successfully complete the project.

- Extent of Applicant's applicant's prior work on the proposed technology and relationship of this prior work to achieving the proposed project objectives.
- Experience of the applicant and participating organizations in managing projects of similar nature and complexity, within budget and on schedule.
- Credentials, capabilities, experience, and availability of key personnel.
- The adequacy and availability of facilities and equipment to perform project tasks.

3. Other Selection Factors

- The selection official will consider the following program policy factors in the selection process:

1. It is desirable to select for award a group of projects which represents a diversity of technical approaches, methods, applications and/or market segments;

2. It may be desirable to support complementary and/or duplicative efforts or projects, which, when taken together, will best achieve the research goals and objectives;

3. It may be desirable that different kinds and sizes of organizations be selected for Award in order to provide a balanced programmatic effort and a variety of different technical perspectives;

4. It is desirable, because of the nature of the energy source, the type of projects envisioned, or limitations of past efforts, to select for award a group of projects with a broad or specific geographic distribution.

B. REVIEW AND SELECTION PROCESS

1. Merit Review

- Applications that pass the initial review will be subjected to a merit review in accordance with the guidance provided in the "Department of Energy Merit Review Guide for Financial Assistance and Unsolicited Proposals." This guide is available under Financial Assistance, Regulations and Guidance at http://www.management.energy.gov/documents/meritrev.pdf.

2. Selection

- The Selection Official will consider the merit review recommendation, program policy factors, and the amount of funds available.

3. Discussions and Award

- The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 10 CFR part 600; and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES

- DOE anticipates notifying applicants selected for award by 8/29/08 and making awards by 9/30/2008.

Part VI - AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

1. Notice of Selection

- DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance. (See Part IV.G with respect to the allowability of pre-award costs.)

  Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

2. Notice of Award

3. A Notice of Financial Assistance Award issued by the contracting officer is the authorizing award document. It normally includes either as an attachment or by reference: (1). Special Terms and Conditions; (2). Applicable program regulations, if any; (3). Application as approved by DOE/NNSA.; (4). DOE assistance regulations at 10 CFR part 600, or, for Federal Demonstration Partnership (FDP) institutions, the FDP terms and conditions; (5). National Policy Assurances To Be Incorporated As Award Terms; (6). Budget Summary; and (7). Federal Assistance Reporting Checklist, which identifies the reporting requirements.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

1. Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR part 600 (See: http://ecfr.gpoaccess.gov), except for grants and cooperative agreements made to Federal Demonstration Partnership (FDP) institutions. The FDP terms and conditions and DOE FDP agency specific terms and conditions are located on the National Science Foundation web site at http://www.nsf.gov/awards/managing/fed_dem_part.jsp.

2. Special Terms and Conditions and National Policy Requirements

Special Terms and Conditions and National Policy Requirements
The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at http://management.energy.gov/business_doe/business_forms.htm.
The National Policy Assurances To Be Incorporated As Award Terms are located at DOE http://management.energy.gov/business_doe/business_forms.htm.

Intellectual Property Provisions
The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at http://www.gc.doe.gov/financial_assistance_awards.htm.

Statement of Substantial Involvement

DOE will have substantial involvement to include the following:

- Involvement in the technical and business management aspects of the project.
- Reviewing and approving project plans, test plans and Statement of Project Objectives to insure adequate detail and inclusion of technical and project milestones. This includes review and approval of one stage of work before work can begin on a subsequent stage if

the project has multiple budget and performance periods.

- Conducting annual program review meetings to ensure adequate progress and that the work accomplishes the program and project objectives. Redirecting work or shifting work emphasis, if needed.
- Promoting and facilitating technology transfer activities, including disseminating program results through presentations and publications.
- Serving as scientific/technical liaison between awardees and other program or industry staff.

C. REPORTING

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement. See the NETL Business Page at http://www.netl.doe.gov/business/forms/FederalAssistanceReportingChecklistExample.pdf for the proposed Checklist for this program**.**

PLEASE NOTE: In addition to the standard reports identified on the "Federal Assistance Reporting Checklist", this Funding Opportunity Announcement requires that a "Topical Report" be submitted at the completion of each go/no-go decision point.

PART VII - QUESTIONS/AGENCY CONTACTS

A. QUESTIONS

Questions regarding the content of the announcement must be submitted through the "Submit Question" feature of the DOE Industry Interactive Procurement System (IIPS) at http://e-center.doe.gov. Locate the program announcement on IIPS and then click on the "Submit Question" button. Enter required information. You will receive an electronic notification that your question has been answered. DOE/NNSA will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE/NNSA cannot answer these questions.

B. AGENCY CONTACT

Name:	Angela M. Harshman
E-mail:	angela.harshman@netl.doe.gov
Telephone (Optional):	412-386-5038

PART VIII - OTHER INFORMATION

A. MODIFICATIONS

Notices of any modifications to this announcement will be posted on Grants.gov and the DOE Industry Interactive Procurement System (IIPS). You can receive an email when a modification or an announcement message is posted by joining the mailing list for this announcement through the link in IIPS. When you download the application at Grants.gov, you can also register to receive notifications of changes through Grants.gov.

B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE

DOE reserves the right, without qualification, to reject any or all applications received in response to this announcement and to select any application, in whole or in part, as a basis for negotiation and/or award.

C. COMMITMENT OF PUBLIC FUNDS

The Contracting Officer is the only individual who can make awards or commit the Government to the expenditure of public funds. A commitment by other than the Contracting Officer, either explicit or implied, is invalid.

D. PROPRIETARY APPLICATION INFORMATION

Patentable ideas, trade secrets, proprietary or confidentional commercial or financial information, disclosure of which may harm the applicant, should be included in an application only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant includes the following legend on the first page of the project narrative and specifies the pages of the application which are to be restricted:

"The data contained in pages _____ of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein to the extent provided in the award. This restriction does not limit the government's right to use or disclose data obtained without restriction from any source, including the applicant."

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

"The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation."

E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL

In conducting the merit review evaluation, the Government may seek the advice of qualified non-Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing an application. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM

Patent Rights. The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. 42 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See "Notice of Right to Request Patent Waiver" in paragraph G below.)

Rights in Technical Data. Normally, the government has unlimited rights in technical data created under a DOE agreement. Delivery or third party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE's own needs or to insure the commercialization of technology developed under a DOE agreement.

Special Protected Data Statutes. **Due to the nature of the work, it has been determined by the Program Office that EPAct Data Protection will be offered to Area of Interest 1 Recipients for a period of up to 5 years. Recipients from Areas of Interest 2 and 3 may apply for EPAct Data Protection on a case by case basis.**

This program is covered by a special protected data statute. The provisions of the statute provide for the protection from public disclosure, for a period of up to five (5) years from the development of the information, of data that would be trade secret, or commercial or financial information that is privileged or confidential, if the information had been obtained from a non-Federal party. Generally, the provision entitled, Rights in Data – Programs Covered Under Special Protected Data Statutes (10 CFR 600 Appendix A to Subpart D), would apply to an award made under this announcement. This provision will identify data or categories of data first produced in the performance of the award that will be made available to the public, notwithstanding the statutory authority to withhold data from public dissemination, and will also identify data that will be recognized by the parties as protected data.

G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER

Applicants may request a waiver http://www.gc.doe.gov/documents/gc62_advance.pdf of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784 http://www.gc.doe.gov/documents/patwaivclau.pdf.

Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small business and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

H. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES

Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or

support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.